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## Geographic Concentration of Violence Between Intimate Partners

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### SYNOPSIS

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**Objectives.** To explore geographic patterns of violence between intimate partners in a metropolitan area with one of the highest injury mortality rates in the nation—Duval County, Florida, which includes the city of Jacksonville.

**Methods.** Using police reports of all serious violent incidents in Duval County in 1992 excluding robberies, the authors analyzed patterns in the location of the incidents. Only cases for which the relationship between the offender and victim was recorded were used.

**Results.** Thematic maps reveal that census tracts with rates above the 75th percentile of assaultive violence between intimates are clustered in certain parts of the city. Concentrated poverty tracts had median rates of violence between intimates nine times higher than other tracts.

**Conclusions.** The finding that violence between intimate partners is concentrated in central city poverty neighborhoods opens up avenues for prevention.

**E**pidemiologic analyses have played an important role in placing assaultive violence involving intimate partners—spouse, boyfriend, girlfriend, cohabitant—squarely on the agenda for surveillance and prevention.<sup>1</sup> These analyses have highlighted the importance of looking not only at homicides but also at nonfatal incidents of assaultive violence and of disaggregating these incidents by the degree of intimacy between offender and victim.<sup>1-4</sup>

One question that has received little attention but has important implications for prevention is the extent to which incidents of assaultive violence involving intimate partners are geographically concentrated. Homicide rates in general have been found to be higher in concentrated central city populations than in other parts of urban areas.<sup>2</sup> Explanations for this pattern emphasize the influence of broad scale social forces such as poverty, lack of opportunity, and racial discrimination.<sup>3,5-9</sup> Compared to other neighborhoods, those with a concentration of people living in poverty are characterized by fewer prospects for employment, less access to public services, fewer opportunities for educational advancement, and lower real estate values. They are also likely to have fewer formal (police protection) or informal (community crime prevention strategies) social controls available.

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It is not clear whether rates of assaultive violence involving intimate partners would be higher in central city poverty areas if analyzed separately from other types of assaultive violence. In the family violence literature, men who act violently toward family members are depicted as coming from all socioeconomic backgrounds, races, religions, occupations, and walks of life.<sup>10</sup> However, empirical studies provide some evidence that assaultive violence is not distributed evenly across the population.<sup>11,12</sup> If violence between intimate partners varies across geographic areas, information about the location of incidents can be used to concentrate prevention resources, thereby increasing society's ability to prevent such violence.<sup>13</sup>

Our study explored geographic patterns of violence between intimate partners across neighborhoods in one metropolitan area—Duval County, Florida, which includes the city of Jacksonville. Duval County was chosen because of its exceptionally high rate of violent deaths. According to the Centers for Disease Control and Prevention, homicide rate of 18.1 per 100,000 was above the 90th national percentile for all U.S. counties.<sup>14</sup> Furthermore, Florida's vital statistics records for 1987 through 1991 reveal that homicide was the leading cause of injury death for 15- to 44-year-olds in Duval county, ahead of both suicide and motor vehicle crashes (Unpublished data, Florida Department of Health and Human Services). Duval County has the added advantage of having a consolidated city and county government and therefore one law enforcement agency for the whole county. This eliminates the possibility of systematic bias due to differential reporting across police districts.

## Methods

To determine the extent to which incidents of intimate violence are geographically clustered in the central city and in areas of concentrated poverty, we calculated census tract-level rates of interpersonal violence and displayed them in the form of thematic maps. For comparison purposes, we also created maps showing the distribution of rates of violence involving friends and acquaintances and those involving strangers.

In addition, we correlated rates of violence with distance between a tract and the central city to see if the rates decreased with greater distance from the center. We also compared the median rates of intimate violence for concentrated poverty tracts and other tracts; we then carried out a similar analysis for rates of violence involving friends and acquaintances and those involving strangers for comparison purposes.

**Creating census tract-level counts from victim data.** From the Duval County Sheriff's Office Uniform Crime Report (UCR) database we obtained the records of all serious violent incidents reported to law enforcement authorities in Duval County in 1992. Since we obtained data on neighborhood characteristics from the 1990 census, we would have preferred to use 1990 crime data, but 1992 was the earliest year for which the information from incident reports was still available on tape.

Although they have their limitations, police data represent the only regular source of information on incidents of violence that is readily available and timely and that includes both location of the incident and victim-offender relationship. It is well known that police data under-represent the full spectrum of domestic violence. First, the law defines as criminal only those acts intended to injure or kill another person (whether or not they result in an injury). This excludes other forms of violence such as mental or emotional abuse. Second, police data reflect only reported incidents. It is widely accepted, therefore, by researchers and advocates that under-reporting exists. However, experts agree that incidents involving serious injury or death are likely to be captured.<sup>15</sup> To minimize bias from under-reporting, we looked at only the most serious offenses, those with UCR codes<sup>16</sup> indicating murder and non-negligent manslaughter, forcible sex offenses (rape, sodomy, and fondling), aggravated assault, and robbery ( $N=12,086$ ).

Because the relationship of the victim to the offender was our primary concern, we dropped cases for which the relationship was coded as either "not applicable" (6% of the total of 12,086) or "undetermined" (24%). Although the latter percentage is substantial, it is consistent with that found by Saltzman and colleagues in a study using law enforcement records from Fulton County, Georgia,<sup>1</sup> and by Williams and Flewelling<sup>17</sup> in a study using the FBI's Supplemental Homicide Report. Furthermore, Rosenberg and Mercy indicate that cases coded as undetermined "...are most likely to be murders of strangers because murders that occur between intimates are more likely to be cleared (i.e., an arrest is made) and appropriately classified."<sup>3</sup>

To investigate the possibility that the incidents for which the relationship was coded "undetermined" were significantly over- or under-represented in certain neighborhoods, we calculated a correlation matrix showing the association between the number of incidents reported per tract in which the relationship was "undetermined," the total number of violent incidents per tract, and the numbers of incidents involving: intimates; strangers; other family; and friends and acquaintances. Each of these figures was highly correlated with the number of "undetermined" cases, with coefficients ranging from 0.79 for other family violence and 0.93 for total violent incidents (excluding the "undetermined" cases). This suggests that the "undetermined" cases are not distributed differently from incidents for which the relationship of victim to offender is known.

Of the 8501 cases for which the victim-offender relationship was known, 61% were aggravated assaults, 25% robberies, 7% rapes, 6% other sex offenses, and 1% murders or non-negligent manslaughter. We excluded robberies from our analysis because the vast majority were perpetrated by strangers (83% of incidents for which the victim-offender relationship was coded), leaving 6312 incidents in the analysis. In those, 40.7% of the victims were attacked by a friend or acquaintance, 22.2% by strangers, 20.8% by intimates, and 16.4% by other family members. For each of these incidents,

we recorded the incident address, UCR code, basic demographics of the victim, and victim-offender relationship.

Using address-matching techniques and the TIGER/Line 1992 files produced by the U.S. Census Bureau,<sup>18</sup> we linked each incident to a census tract based on its location. The first attempt resulted in 4696 matches (74.4%) out of 6312 incidents. After editing the remaining addresses to conform to the format used by the Census Bureau, we linked an additional 600 cases, for a total match rate of 84%. We then aggregated the incidents to create census tract-level counts of victims of violence by victim-offender relationship. After obtaining sociodemographic data describing the tracts from the 1990 Census, we excluded six tracts with no households and one central business district tract with only 26 households, leaving 131 tracts and 5111 incidents in the analysis.

As a final check on the reliability of the key indicator in this study, the relationship between victim and offender, we selected a random 8% sample of the 1992 records (excluding robberies but including cases for which the relationship between victim and offender was recorded as "undetermined" and those that did not achieve a successful match on address). A trained coder reviewed the narrative portion of the actual police reports for this sample and coded the victim-offender relationship.

We checked these codes against the computerized code to identify any discrepancies. Eighty percent of the sample (505 cases) had computerized codes that matched the codes assigned from reviewing the narrative. Of the 127 cases that did not match, most represented differences over which cases were coded as strangers, acquaintances, or victim-offender relationship undetermined. Only 17 of the cases our reviewer coded as involving intimates were new cases, that is, ones not represented in the original 101 cases of intimate violence in the sample. This represents a 17% rate of misclassification.

**Analytical methods.** Because of the focus in this study on the location of the incident, we created census tract-level rates based on incident address. Ideally, the numerator would only include residents of the tract; the database, however, did not include the victim's address of residence, thus making it impossible to distinguish tract residents from non-residents. Others, however, have found that a large proportion of serious personal crimes occur near the residences of both victims and offenders, suggesting that rates based only on residents probably would not differ significantly from those used here.<sup>19</sup>

Thematic maps show the extent to which high rates of violence involving intimates clustered in the central city as expected based on studies of aggregate homicide rates. Similar maps show the distribution of rates of violence involving friends and acquaintances, and those involving strangers. In addition, we correlated a measure of the distance between each tract and the centroid of a central tract—Tract 29—with the disaggregated rates of assaultive violence to see if the latter decrease with greater distance from the central city.

We went on to investigate the extent to which these overlap with tracts with high concentrations of residents living in poverty and social isolation—referred to throughout the paper as concentrated poverty tracts. We identified these using the following widely accepted indicators taken from the 1990 U.S. Census: the percentage of the neighborhood's residents who were on public assistance, the percent of female-headed households, and the percent of working-age men who were unemployed.<sup>20</sup> We classified a tract as a concentrated poverty tract if it scored more than twice the median on all three of these indicators. Fifteen tracts in Jacksonville met the criterion. We compared median rates for incidents involving intimate partners and for other types of assaultive violence between concentrated poverty tracts and other tracts.

## Results

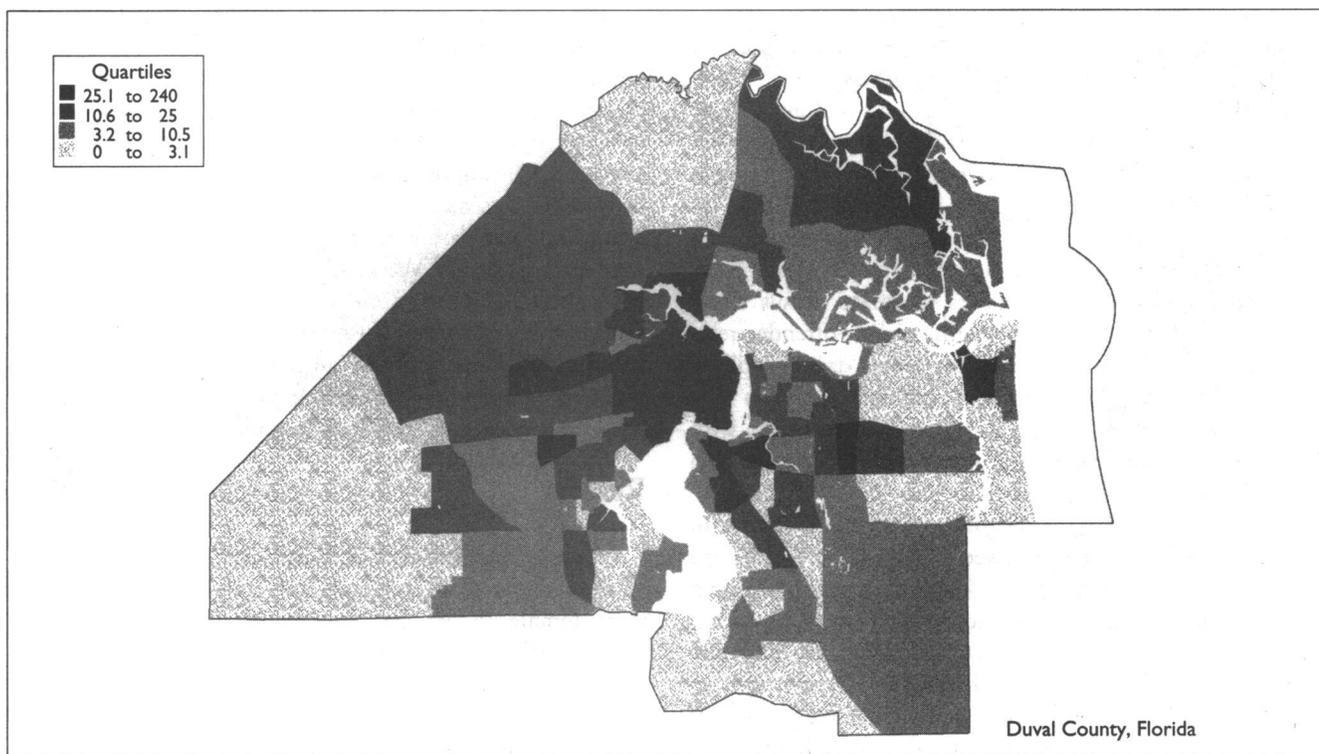
As in national studies of homicides,<sup>3</sup> a large proportion of the victims of intimate assaultive violence in this study were female (77%). In contrast, victims of attacks by strangers were mostly male (Table 1).

Map 1 shows the degree of spatial concentration of tracts with rates of assaultive violence between intimates above the 75th percentile (25.1 through 240 incidents per 10,000). Most of the tracts immediately surrounding the central city cluster have rates above the 50th percentile but below the 75th (10.6 through 25.0 incidents per 10,000). With a few exceptions, the tracts below the 25th percentile (with rates below 3.2 per 10,000) tend to be the farthest removed from the central city cluster. Maps 2 and 3 show

**Table 1. Percent female, percent assaulted with a firearm, and median age by victim-offender relationship, 6312 incidents, Duval County, Florida, 1992<sup>a</sup>**

<i>Victim of attack by an intimate partner</i>	
Percent female . . . . .	67.9
Percent attacked with firearm . . . . .	21.4
Median age (years) . . . . .	30
<i>Victim of attack by other family member</i>	
Percent female . . . . .	57.7
Percent attacked with firearm . . . . .	16.1
Median age (years) . . . . .	17
<i>Victim of attack by friend or acquaintance</i>	
Percent female . . . . .	46.8
Percent attacked with firearm . . . . .	31.0
Median age (years) . . . . .	22
<i>Victim of attack by stranger</i>	
Percent female . . . . .	35.5
Percent attacked with firearm . . . . .	42.2
Median age (years) . . . . .	25

<sup>a</sup>Includes all serious offenses reported to law enforcement authorities—other than robberies—for which victim-offender relationship was known.

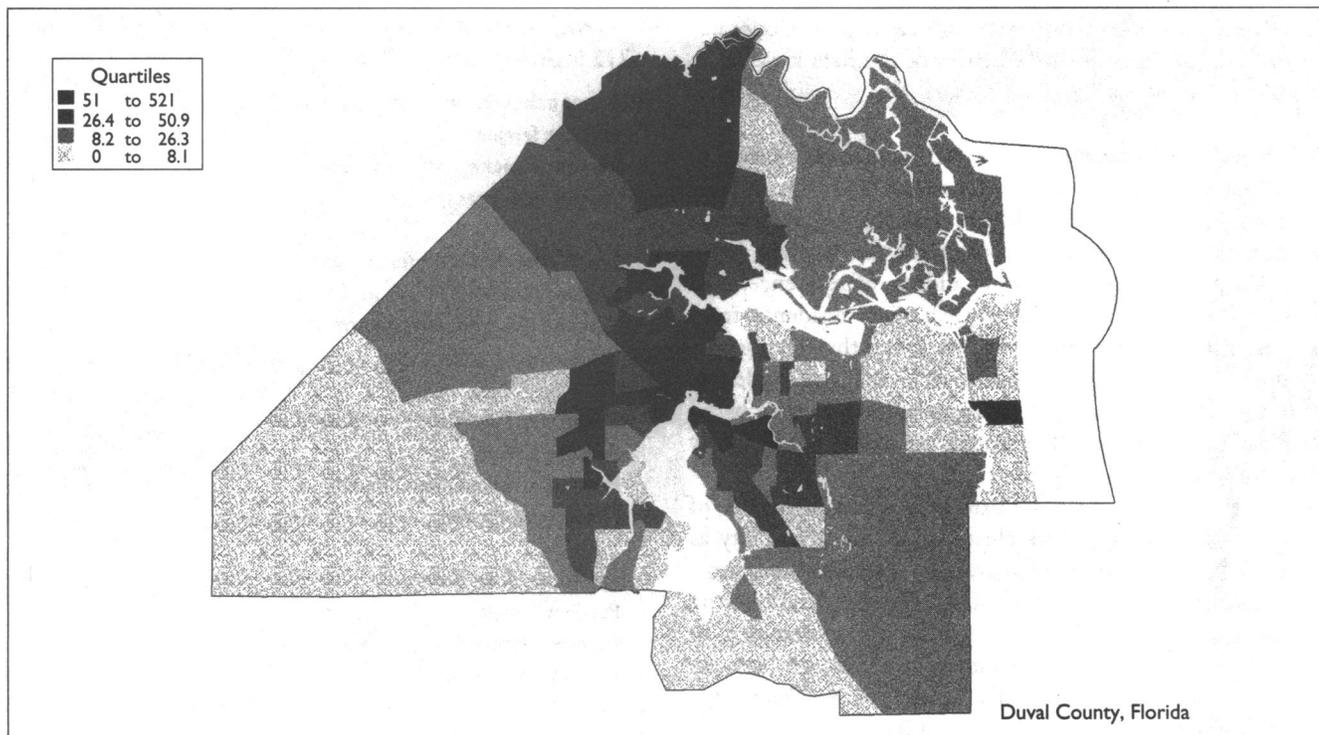


**Map 1. Rates of assaultive violence between intimates per 10,000 population, by census tract, Duval County, Florida, 1992**

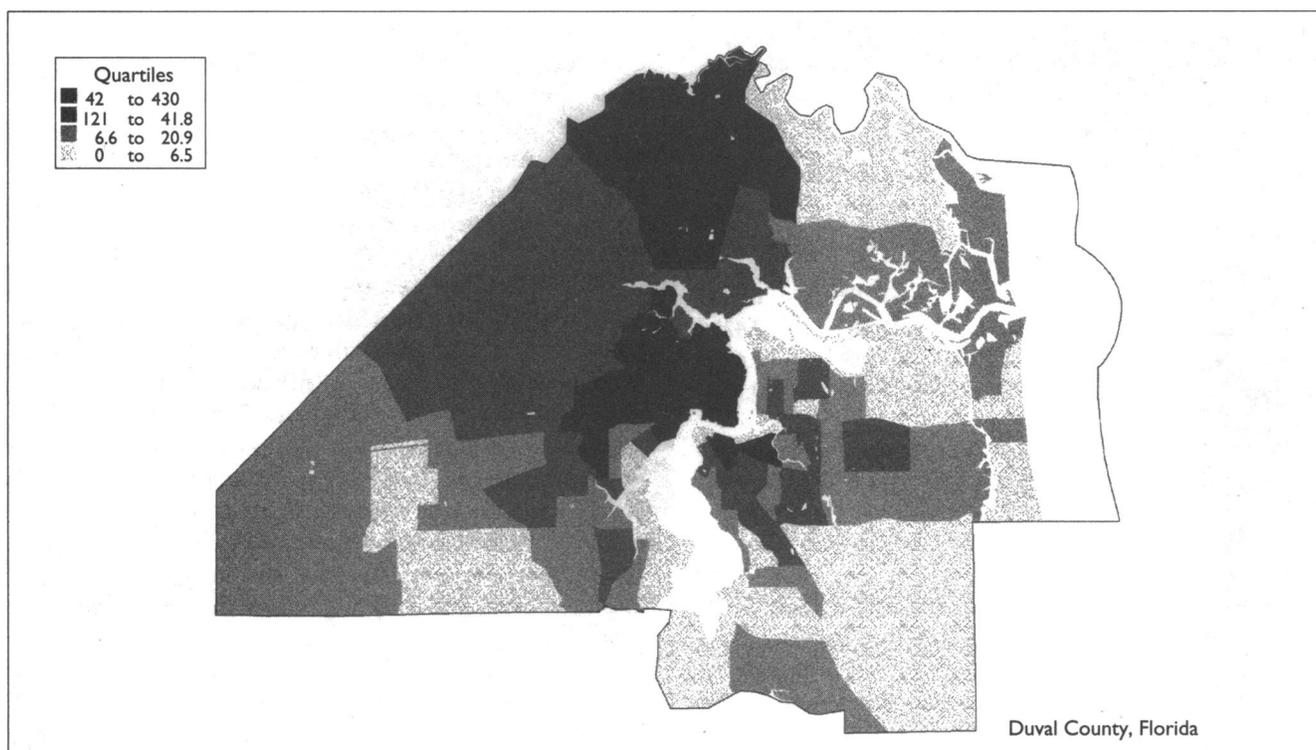
similar patterns for rates of assaultive violence involving strangers and incidents involving friends and acquaintances.

A correlational analysis of the relationship between distance from the central city and rates of assaultive violence

reveals the same pattern. All three correlation coefficients are significant and negative, indicating that tracts that are further away from the center of the city have lower rates of assaultive violence. The relationship is slightly weaker for



**Map 2. Rates of assaultive violence between strangers per 10,000 population, by census tract, Duval County, Florida, 1992**

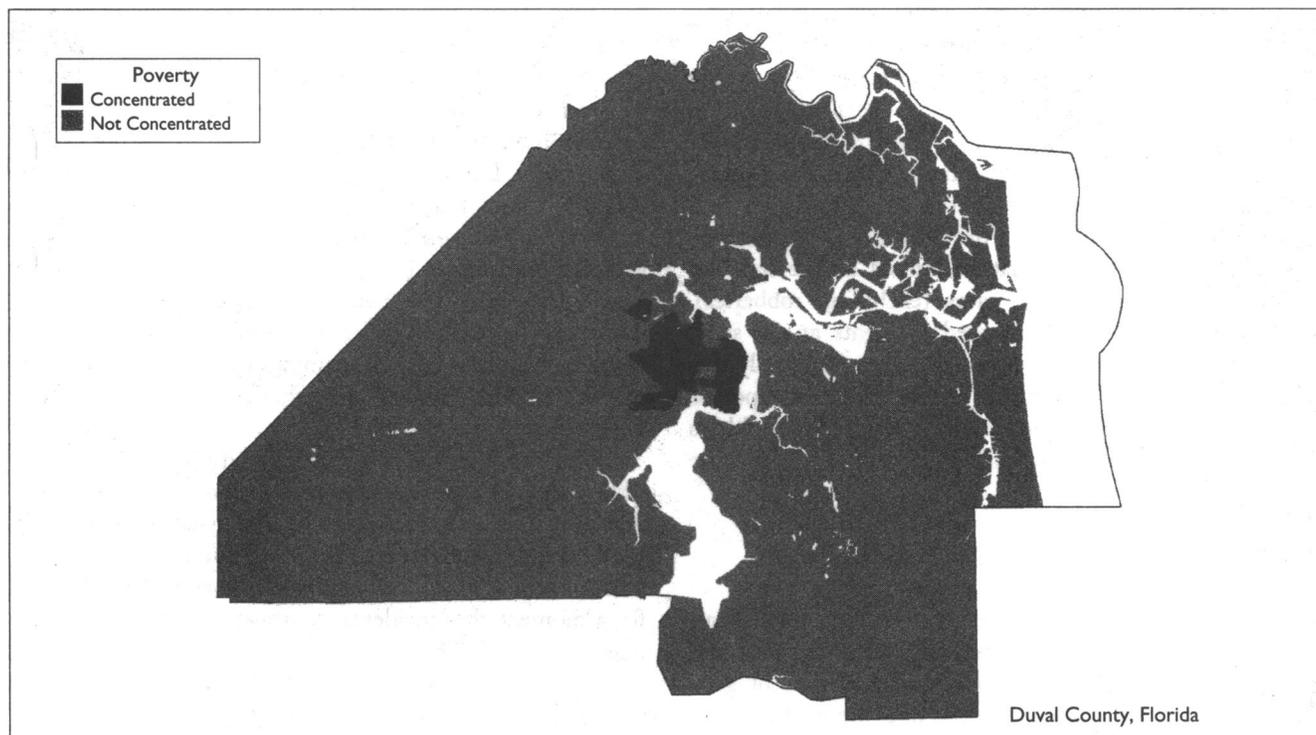


**Map 3. Rates of assaultive violence between friends or acquaintances per 10,000 population, by census tract, Duval County, Florida, 1992**

violence involving strangers ( $r=-0.38$ ) than it is either for incidents involving intimates ( $r=-0.43$ ) or those involving friends and acquaintances ( $r=-0.43$ ).

Tracts scoring more than twice the median on all three

indicators of concentrated urban poverty also cluster in and around central city Jacksonville (Map 4). The difference in rates of intimate violence between groups of tracts is dramatic, with concentrated poverty tracts showing a median



**Map 4. Census tracts ranking high on indicators of concentrated poverty, Duval County, Florida, 1992**

**Table 2. Median rates per 10,000 population of assaultive violence by victim-offender relationship—comparing concentrated poverty and other tracts—Duval County, Florida, 1992<sup>a</sup>**

Relationship	15 concentrated	
	poverty tracts	116 other tracts
Intimates . . . . .	61.28 <sup>b</sup>	6.98
Family members . . . . .	47.18 <sup>b</sup>	7.42
Friends and acquaintances . . . . .	154.08 <sup>b</sup>	16.60
Strangers . . . . .	117.72 <sup>b</sup>	19.18

<sup>a</sup>Includes all serious offenses reported to law enforcement authorities—other than robberies—for which victim-offender relationship and census tract were known (5111 incidents; 131 tracts).

<sup>b</sup>Difference significant at  $P \leq 0.01$  level.

rate nine times higher than other tracts (see Table 2). As expected based on studies of homicide in general, differences in other rates of assaultive violence are also dramatic, with median rates of friend and acquaintance violence nine times higher in concentrated poverty tracts, rates of stranger violence six times higher, and rates of family violence against non-intimates six and a half times higher.

A correlational analysis provides further evidence of the relationship between distance from city center, rates of concentrated urban poverty, and rates of assaultive violence. Analyzed separately, the concentrated poverty indicators are all positively correlated with closeness to the center of the city and show a strong positive correlation with each of the rates of assaultive violence disaggregated by victim-offender relationship (data not shown; available from authors).

To investigate the possibility that these dramatically higher rates were produced by multiple incidents at relatively few addresses, we calculated frequencies by incident address. The address for the Health and Rehabilitative Services (HRS) office was removed from the analysis because many incidents were reported from the office and its address was subsequently inappropriately entered as the incident location. Of the remaining cases (excluding robberies), 11.5% (790) consisted of repeated incidents at the same address, with a majority of these (75%) involving only two incidents of violence. Therefore, it is not likely that repeated violence between friends or intimates at the same address would explain the dramatically higher rates of violence observed in certain tracts.

**Discussion**

Thematic maps showing the distribution across census tracts of serious violent incidents reported by the police and involving intimate partners reveal a high degree of geographical concentration. The highest rates are in the north-west quadrant, including the city center, among concentrated poverty tracts. This finding runs counter to the

depiction in the family violence literature of the “batterer as everyone”<sup>10</sup> but is consistent with the few individual-level epidemiologic studies that have investigated this question, and with analyses of injury mortality by level of urbanization.<sup>11,12</sup> An exploration of incident addresses confirmed that these high rates cannot be explained by repeated assaults committed at the same address during the year of the study.

The finding that violence between intimate partners is geographically concentrated in central city poverty neighborhoods, where public health workers are likely to be active on an ongoing basis, opens up avenues for prevention likely to be applicable in many U.S. cities. Dealing with concrete problems of violence between intimates by no means ignores the structural inequalities that many contend are the underlying causes of domestic violence. Rather, if carried out with sensitivity and respect, outreach efforts aimed at preventing domestic violence can give men and women the means to bring about some positive change in their lives before it is too late.

Staff at the Office of the Duval County Sheriff and at Hubbard House, a full-service domestic violence center in Jacksonville providing a safe, non-violent place for women to plan their futures, are discussing a proactive outreach to female victims of intimate violence in the high risk areas identified in this study. In a personal interview on November 9, 1995, Rita K. De Young, the C.E.O. of Hubbard House, indicated that under their model, an advocate would visit the victim in her home, offer her counseling, advise her in the use of appropriate legal and health services, and let her know of the protection and ongoing support offered by Hubbard House; this includes a First Step Program for Batterers. Efforts would be focused on victims who come to the attention of law enforcement for the first time.

Such efforts on the part of agency personnel could be enhanced by community-based action to ensure timely intervention. Levinson, in his cross-cultural study of family violence, found that when a neighbor or mediator intervened to stop a beating or when the victim was immediately escorted to a shelter, beatings were less frequent.<sup>21</sup> Timely intervention could also involve mobilizing neighbors to surround and protect the victim in public places as long as she fears reprisal or mobilizing community resources to substitute for support, financial and otherwise, she received from her abuser.

With the data available for this study, however, the possibility that the observed pattern is due to systematic under-reporting of incidents cannot be dismissed. Although we have minimized the potential for bias by focusing only on murders, sex offenses, and aggravated assaults, let us assume for a moment that incidents in affluent neighborhoods are under-reported. This might occur because residences in more wealthy neighborhoods are farther apart, making it less likely that a neighbor will hear an escalating domestic dispute and call the police. The wealthy may have the means to hide evidence of domestic violence and may be more

likely to do so in order to protect their economic and social standing. Although there is no firm research evidence to support this conclusion, it is possible that incidents occurring in more affluent neighborhoods are less likely to involve firearms and therefore less likely to be reported. It is also possible that concentrated poverty neighborhoods are not more violent; instead, in these areas more potential witnesses may be available or witnesses may be more likely to report domestic violence incidents. If this is true, residents of these areas may also be more open to violence prevention efforts. Victims' awareness of domestic violence as a problem and willingness to seek help and the willingness of neighbors and bystanders to intervene are critical to the success of violence prevention.

If on the other hand we assume greater under-reporting in concentrated poverty neighborhoods, possibly because of an underlying lack of trust in the system of law enforcement, then such neighborhoods have even higher rates of violence between intimate partners than indicated in our study, and prevention programs focused on these populations become even more critical. If lack of trust in law enforcement is widespread, however, interventions might be more effective if carried out by institutions and organizations other than law enforcement, for example, by public health practitioners based in these communities. The latter could be trained to offer protection and refer victims to available services such as health care, counseling, legal assistance, and shelters. Although not a part of law enforcement, these practitioners would have some form of direct access to police and other emergency services.

If we assume no significant reporting bias, the patterns we observed should be interpreted as indicative of the geographic concentration of severe assaultive violence, that is, violence likely to result in severe injury or death, not necessarily of all forms of domestic violence. Further, our findings should not be interpreted to mean that affluent neighborhoods have no problems of intimate violence and require no intervention. The study does reveal, however, a concentration of serious assaultive violence between intimate partners in the poorest neighborhoods of one Florida county. This opens up previously unexplored avenues for preventing intimate violence.

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## References

1. Saltzman LE, Mercy JA, Rhodes PH. Identification of nonfatal family and intimate assault incidents in police data. *Am J Public Health* 1992;82:1018-1020.
2. Baker SP, O'Neill B, Ginsburg MJ, Li G. *The injury fact book*. New York: Oxford University Press, 1992.
3. Rosenberg ML, Mercy JA. Assaultive violence. In: Rosenberg ML, Fenley MA, editors. *Violence in America*. New York: Oxford University Press, 1991:14-50.
4. Wishner AR, Schwarz DF, Grisso JA, Holmes JH, Sutton RL. Interpersonal violence-related injuries in an African-American community in Philadelphia. *Am J Public Health* 1991;81:1474-1476.
5. Blau J, Blau P. The cost of inequality: metropolitan structure and violent crime. *American Sociological Rev* 1982;47(Feb):114-127.
6. Blau PM, Golden RM. Metropolitan structure and criminal violence. *Sociological Quarterly* 1986;27:15-26.
7. Decher DL, Shichor D, O'Brien RM. *Urban structure and victimization*. Lexington and Toronto: Lexington Books, 1982.
8. Loftin C, Hill R. Regional subculture and homicide: an examination of the Gastil-Hackney thesis. *American Sociological Review* 1974;39(Oct):714-724.
9. Messner SF. Regional differences in the economic correlates of the urban homicide rate: some evidence on the importance of cultural context. *Criminology* 1983;21:477-488.
10. Hotaling GT, Straus MA, Lincoln AJ. Intrafamily violence and crime and violence outside the family. In: Straus MA, Gelles RJ, editors. *Physical violence in American families*. New Brunswick (NJ) and London: Transaction Publishers, 1990.
11. Hotaling GT, Sugarman DB. An analysis of risk markers in husband to wife violence: the current state of knowledge. *Violence and Victims* 1986;1:101-124.
12. Sorenson SB, Upchurch DM, Shen H. Violence and injury in marital arguments: risk patterns and gender differences. *Am J Public Health* 1996;86:35-40.
13. Petrie C, Garner J. Is violence preventable? In: Besharov DJ, editor. *Family violence: research and public policy issues*. Washington DC: AEI Press, 1990.
14. Biometrics Branch, Division of Injury Control, Centers for Disease Control [US]. *Injury mortality atlas*. Atlanta (GA): CDC; 1991.
15. Roncek DW, Meier PA. Bars, blocks and crimes revisited: linking the theory of routine activities to the empiricism of "hot spots." *Criminology* 1991;29(4):725-753.
16. Bureau of Justice Statistics, Department of Justice [US]. *Criminal victimization in the United States, 1986: a national crime survey report*. NCJ-111456. Washington DC: Bureau of Justice Statistics; 1988.
17. Williams KR, Flewelling RL. The social production of criminal homicide: a comparative study of disaggregated rates in American cities. *American Sociological Rev* 1988;53(June):426.
18. Data Users' Services Division, Bureau of the Census [US]. *TIGER/Line 1992*. CD 92-TGR-13.
19. Sampson RJ. The effects of urbanization and neighborhood characteristics in criminal victimization. In: Figlio RM, Hakim S, Rengert GF, editors. *Metropolitan crime patterns*. Monsey (NY): Criminal Justice Press, 1986.
20. Ricketts ER, Sawhill IV. Defining and measuring the underclass. *J Policy Analysis and Management* 1988;7(2):316-325.
21. Levinson D. *Family violence in cross-cultural perspective*. Vol.1. New Park (CA): Sage Publications, 1989.